

Serial No. 10/760,483

Docket No. 1186.1031

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. When strikethrough cannot easily be perceived, or when five or fewer characters are deleted, [[double brackets]] are used to show the deletion. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 13, 17 and 22 in accordance with the following:

1. (currently amended) A vapor-deposited film comprising a film substrate consisting essentially of a polymer material and a vapor deposition layer formed in contact with the substrate and consisting essentially of a ceramic material, wherein the substrate is subjected to a plasma pretreatment before formation of the vapor deposition layer on the film substrate, by a special plasma using a hollow anode plasma processing apparatus,

wherein said ceramic material is formed of at least one inorganic oxide comprising aluminum oxide having a gradient structure in terms of the atomic ratio of aluminum to oxygen such that said atomic ratio is consecutively changed within a range of 1:2 to 1:1 from the side in contact with said film substrate toward the surface of the ~~aluminum oxide~~ vapor deposition layer.

2. (original) The vapor-deposited film according to claim 1, wherein said hollow anode plasma processing apparatus is a magnetic assisted hollow anode plasma processing apparatus further comprising a magnet.

3. (original) The vapor-deposited film according to claim 1, wherein the thickness of said vapor deposition layer is between 5 nm and 300 nm.

4. (cancelled)

5. (cancelled)

6. (cancelled)

7. (previously presented) The vapor-deposited film according to claim 1, wherein said plasma pretreatment is a low temperature plasma treatment carried out by using at least one gas selected from the group consisting of argon nitrogen oxygen and hydrogen, under the conditions that the self bias value is between 200V and 2,000V, and the Ed value defined by

Serial No. 10/760,483

Docket No. 1186.1031

" E_d =plasma density x processing time " is between 100 ($V \cdot s \cdot m^{-2}$) and 10,000 ($V \cdot s \cdot m^{-2}$).

8. (original) The vapor-deposited film according to claim 1, wherein said plasma pretreatment includes a first processing using an inert gas, followed by a second processing, using at least one gas selected from the group consisting of nitrogen oxygen hydrogen, and a mixture thereof.

9. (original) The vapor-deposited film according to claim 8, wherein said inert gas is at least one selected from the group consisting of argon and helium.

10. (original) The vapor-deposited film according to claim 1, wherein said plasma pretreatment includes a first processing using a mixed gas consisting of nitrogen and oxygen, followed by a second processing using hydrogen.

11. (original) The vapor-deposited film according to claim 1, wherein said polymer material is at least one polymer selected from the group consisting of polyethylene, polypropylene, polyamides, polyesters, polycarbonate, polyacrylonitrile, polystyrene, polyvinyl chloride, cellulose, triacetyl cellulose, polyvinyl alcohol, polyurethanes and polymers having chemically modified bodies thereof.

12. (original) The vapor-deposited film according to claim 11, wherein said polyesters include at least one polymer selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate, polybutylene terephthalate, polybutylene naphthalate and copolymers thereof.

13. (currently amended) The vapor-deposited film according to claim 1, further comprising a composite covering layer formed on said vapor-deposited film, ~~consisting essentially of~~ by using at least one material selected from the group consisting of a hydrogen radical hydroxyl group-containing polymer compound, a metal alkoxide, a hydrolyzate-hydrolysate of the metal alkoxide thereof and a the hydroxyl group-containing polymer compound thereof.

14. (original) The vapor-deposited film according to claim 13, wherein said hydrogen radical-containing compound includes at least one compound selected from the group consisting of polyvinyl alcohol, poly(vinyl alcohol-co-ethylene), cellulose and starch.

15. (original) The vapor-deposited film according to claim 13, wherein said metal

Serial No. 10/760,483

Docket No. 1186.1031

alkoxide is selected from the group consisting of silane alkoxide and a silane coupling agent.

16. (original) The vapor-deposited film according to claim 1, wherein said plasma pretreatment and the vapor deposition of aluminum oxide are carried out consecutively within the same film-forming apparatus without breaking the vacuum.

17. (currently amended) A vapor-deposited film comprising a film substrate consisting essentially of a polymer material and a vapor deposition layer formed in contact with the film substrate and consisting essentially of aluminum oxide, wherein the film substrate is subjected to a plasma pretreatment before formation of the vapor deposition layer on the film substrate and that the aluminum oxide layer formed by the vapor deposition has a gradient structure in terms of an atomic ratio of aluminum to oxygen from the side in contact with the film substrate toward the surface of the aluminum oxide layer,

wherein said atomic ratio of aluminum to oxygen is changed within a range of 1:2 to 1:1 from the side in contact with the substrate toward the surface of said aluminum oxide layer.

18. (cancelled)

19. (original) The vapor-deposited film according to claim 17, wherein said plasma pretreatment is a high frequency plasma treatment.

20. (original) The vapor-deposited film according to claim 17, wherein said polymer material is at least one polymer selected from the group consisting of polyethylene, polypropylene, polyamides, polyesters, polycarbonate, polyacrylonitrile, polystyrene, polyvinyl chloride, cellulose, triacetyl cellulose, polyvinyl alcohol, polyurethanes and polymers having chemically modified bodies thereof.

21. (original) The vapor-deposited film according to claim 20, wherein said polyesters include at least one polymer selected from the group consisting of polyethylene terephthalate, polyethylene naphthalate, polybutylene terephthalate, polybutylene naphthalate and copolymers thereof.

22. (currently amended) The vapor-deposited film according to claim 17, further comprising a composite covering layer on said vapor-deposited film, ~~consisting essentially of by~~ using at least one material selected from the group consisting of a ~~hydrogen radical~~hydroxyl ~~group-containing polymer compound, a metal alkoxide, a hydrolyzate~~hydrolysate of the metal

Serial No. 10/760,483

Docket No. 1186.1031

alkoxide thereof and a the hydroxyl group-containing polymer compound thereof.

23. (original) The vapor-deposited film according to claim 22, wherein said hydrogen radical-containing compound includes at least one compound selected from the group consisting of polyvinyl alcohol, poly(vinyl alcohol-co-ethylene), cellulose and starch.

24. (original) The vapor-deposited film according to claim 22, wherein said metal alkoxide is selected from the group consisting of silane alkoxide and a silane coupling agent.

25. (original) The vapor-deposited film according to claim 17, wherein said plasma pretreatment and the vapor deposition of aluminum oxide are carried out consecutively within the same film-forming apparatus without breaking the vacuum.